REMARKS

The specification has been amended to recite that the subject application is a continuation of U.S. application Serial No. 09/265,225, filed March 10, 1999, to which the benefit of its earlier filing date is claimed.

Previously presented claims 5-17 are pending.

The forgoing amendment adds no new matter. Entry is requested.

Rejections over Drummond et al. (U.S. Patent No. 6,135,346)

Claims 5, 7, 9-13 and 17 are rejected under 35 U.S.C. § 102 (e) as being anticipated by Drummond et al. (U.S. Patent No. 6,135,346).

Claim 15 is rejected under 35 U.S.C. § 103 (a) as being unpatentable over Drummond et al. (U.S. Patent No. 6,135,346).

Claims 6 and 14 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Drummond et al. (U.S. Patent No. 6,135,346) in view of Saidman et al. (U.S. Patent No. 4,983,424).

Claims 8 and 16 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Drummond et al. (U.S. Patent No. 6,135,346) in view of Hattori et al. (JP 53011933A).

Attached is a Rule 131 declaration, filed September 27, 2001 in parent application Serial No. 09/265,225, which evidences invention prior to the November 20, 1998 filing date of Drummond et al. Applicants submit that Drummond et al. is not prior art to applicants' claimed invention. As such, the rejections over Drummond et al alone, or in view of either Saidman et al. or Hattori et al. Withdrawal is requested.

Obviousness-type double patenting rejection

Claims 5-7, 9-15 and 17 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatenable over claims 1-4 of copending application Serial 09/265,225 (also referred to as the "parent application") in view of Drummond et al. (U.S. Patent No. 6,135,346).

Applicants submit herewith a terminal disclaimer.

While a disclaimer deemed proper and is filed herewith, applicants note that claims 1-4 have been canceled from the parent application and are being prosecuted in the subject application. The following claims remain in the parent application:

> Claim 18. A multi-ply tubular container for products, comprising:
> a first ply wrapped into a tubular shape and having an inner surface;
> a second ply wrapped into a tubular shape and having an outer surface positioned in face-to-face contact with the inner surface of said first ply, at least one of said first and second plies comprising a body ply formed of a fibrous paperboard; and
> a foamed aqueous adhesive between the inner surface of said first ply and the outer surface of said second ply to adhere the plies together, said adhesive being in the form of a foamed liquid prior to the first and second plies being positioned in contact.
>
> Claim 20. The tubular container of claim 18 wherein said aqueous adhesive is selected from the group consisting of vinyl acetate/ethylene copolymers, vinyl acetate, dextrin polyvinyl acetate, polyvinyl alcohol, acrylic adhesives and mixtures thereof.

Claims 18 and 20 correspond to claims 2 and 3 of U.S. Patent No. 6,135,346, to Drummond et al., which issued October 24, 2000.

Claims 1, 2 and 3 of U.S. Patent No. 6,135,346 were copied and presented as applicants' claims 18, 19 and 20, respectively, in their response, mailed December 14, 2000, filed in response to the Office action, paper No. 4, of the parent application. The limitation of claim 19 was later inserted into the claim 18 (applicants' response, filed March 7, 2002 in the parent application). Thus, claims 2 and 3 of U.S. Patent No. 6,135,346 correspond to applicants' parent claims 18 and 20, respectively.

Outstanding prior art rejection of parent application

For the examiner's information, claims 18 and 20 have been finally rejected under 35 U.S.C. § 103 (a) as being unpatentably obvious over Knauf (U.S. Patent No. 5,415,910) in view of Pole et al. (U.S. Patent No. 4,240,860). The Knauf and Pole et al. patents are of record in the subject application.

An appeal brief has been filed and an examiner's answer, mailed June 29, 2004, received.

In order to advance prosecution, the examiner is requested to consider the following remarks in making any rejection over the Knauf and/or Pole et al. patent references.

Knauf discloses a tubular multilayered dough container formed from three helically wound layers with adhesive layers applied to adhere the three layers together. Fig. 2 is described as showing a multilayered container comprising an inner layer (liner) 20, a strength layer 22 and an outer (or label) layer 24, with adhesive layers 21 and 23 applied to adhere the three layers together (col. 3, lines 62-66).

The invention of Knauf is directed to the inner layer, 20. Fig. 3 is described as showing a portion of the liner 20, which comprises a glueable paper layer 34, an adhesive layer 33, a gas and moisture barrier layer 32, an adhesive layer 36 and a heat seal layer 38 (col. 4, lines 15-18). The barrier layer 32 is preferable aluminum foil. When the layer is aluminum foil, it has applied and bonded thereto a multilayer coextrusion comprising a polyethylene methylacrylic acid copolymer resin layer 36 such as NUCREL (Du Pont) or a polyethylene acrylic acid such as PRIMACOR (Dow) and a layer 38 of a heat sealing material, e.g., high density polyethylene (HDPE) (col. 4, lines 19-31). The use of a coextrusion is described as providing an excellent bond between the aluminum foil and the HDPE, the acrylic acid copolymer NUCREL or PRIMICOR effecting a better bond to aluminum than does HDPE (sentence bridging cols. 4 and 5). Knauf discloses (col. 5, lines 37-39) that adhesive other than NUCREL or PRIMICOR may be used to bond the paper layer to the aluminum foil (i.e., to the surface of the aluminum foil opposite the surface which has adhered thereto the coextruded layers 36 and 38). Examples include low density polyethylene (LDPE) or acrylic acid copolymers other than the NUCREL or PRIMACOR.

Knauf discloses that, if desired, appropriate adhesives (i.e., for use as adhesive layer 33) may include water-based adhesives (col. 5, lines 48-49). Knauf, however fails to disclose, suggest or exemplify any adhesive that would constitute an appropriate adhesive. At most Knauf discloses that appropriate water based adhesives may, if desired, be used to form one layer of a multilayered tubular container, i.e., the liner layer.

There is no disclosure or suggestion that a water based adhesive, let alone a foamed water based adhesive, can be used to bond the layers of a multilayer container to one another.

Knauf provides no disclosure or suggestion to use a foamed aqueous based adhesive as adhesive layer 33, let alone adhesive layers 21 or 23 (used to bond the layers of Knauf's multilayer container together), or to bond a first ply to a second ply to form a tubular container. Pole et al. fail to cure this deficiency.

Pole et al. disclose solvent-free water-based adhesives compositions comprising a rubbery polymer latex stabilized with an emulsifier which forms water-insoluble compound with zinc and cadmium ions. Pole et al. describe the use of the adhesive to bond one preformed body to another preformed body. Exemplified is the use of the adhesive to adhere paper to the surface of an insulating fibrous mat. At col. 3, line 65-66 it is disclosed that "[t]he adhesive compositions can be applied by the usual means in either foamed or unfoamed form". Pole et al. fail to suggest that foamed aqueous based adhesives may be used in the applications described by Knauf, let alone in core and tube winding operations in general so as to render the claims obvious.

The use of the resins as described by Knauf combined with the disclosure of Pole et al. would not lead one skilled in the art to use aqueous based foamed adhesives in tube and core winding, and would not render obvious applicants' claimed invention. There is no disclosure or suggestion in the prior art of record that foamed aqueous adhesives can be used in the manufacture of tubes and cores, or used to provide advantages when using conventional corewinding equipment.

Applicants acknowledge that aqueous adhesives have been use in core and tube manufacturing. The knowledge that aqueous adhesives have been used in paper core manufacture would not render obvious the use of aqueous foamed adhesives in paper core manufacturing, even when combined with the knowledge that aqueous adhesives, or even aqueous foamed adhesives, are useful for adhering paper. In the core and tube construction industries one piece of paper is not merely laminated to a second piece of paper. Production rates require the use of high speed corewinding equipment.

Applicants have discovered that foamed adhesives can be used to prepare core and tubes using conventional corewinding equipment and improves the efficiency of the

core making process by allowing a much wider operating window of adhesive application amount during changes in production speed. By using foamed adhesives in accordance with the invention, corewinding equipment can be run up to 100% maximum line speed with no adjustment to application amount.

The mere knowledge that aqueous adhesives and aqueous foamed adhesives are known to be useful for adhering paper, and that aqueous adhesives are used in paper core manufacture would not led one skilled in the art to a believe that foamed adhesives can be used in core and tube construction, let alone provide the advantages afforded by the use thereof.

In the practice of applicants' invention a foamed aqueous based adhesive is applied during conventional tubewinding processes in which one or more plies are bonded together. Applicants' have discovered that the use of a foamed adhesive can successfully be used in the manufacture of cores and tubes and, in addition, the use of a foamed adhesive allows less adhesive to be used resulting in faster drying times, a reduction in the amount of adhesive used and a reduced cure time for the finished tube construction.

Tubes for use as winding cores, composite cans or tubes for packaged goods, concrete forms, etc. are generally produced from two or more plies of paper, fed either by a web or from a stack of precut sheets. Adhesive is applied between the plies, and the paper is then wound around a stationary steel mandril. Belts twisted around the mandril and plies provide compression and drive the process, pulling the webs and feeding the wound tube forward. At some point located past the end of the steel mandril, the wound tube is cut, and the finished tube is then ready for use or for the next step in a converting process.

While the limiting factor in this process has historically been the speed of the equipment, increased demand for higher output of the converting equipment, and improvements in equipment engineering and fabrication, have now made the adhesive systems – almost exclusively waterborne adhesives in North America – the limiting factor in the converting process. Specifically, it is necessary that the applied adhesive be properly "set" by the time the tube is cut and further handled or processed. For this to happen, enough water must be removed from the adhesive itself (through absorption or

evaporation, or a combination of the two) to form a sufficiently strong and cohesive bond. Due to the speeds of newer and faster equipment, there is not enough time available in the process between the adhesive application and the cutting station for this to occur, and so machine speed must be slowed down.

Applicants have discovered that foamed adhesives can be used to prepare core and tubes using conventional corewinding equipment and improves the efficiency of the core making process by allowing a much wider operating window of adhesive application amount during changes in production speed.

As described within the specification, adhesives used in core and tube manufacturing industries must comprise enough water so that the adhesive is wet at the time of contact, but not so wet that the bond takes a long time to form. When using conventional liquid adhesives in core and tube construction, as winder speed is increased the amount of time for water to dissipate decreases. Without adjustments by the operator of the machinery to reduce the amount of adhesive applied, the wet adhesive layer can cause ply slippage and shutdown and/or "dog ears" at the cut off saw (the term "dog ears" refers to ply separation during the core cutting stage which typically causes the ply to folds back upon itself resembling a dog's ear). Thus, when using conventional adhesives, adjustment must be made to the adhesive application amount every time production speeds are changed.

Applicants have discovered that by using foamed adhesives in accordance with the invention, corewinding equipment can be run up to 100% maximum line speed with no adjustment to application amount. In addition, use of foamed adhesives in accordance with the invention reduces the dimension change of the final core or tube and reduces the possibility of ply slippage and/or dog ears.

There is no disclosure or suggestion in the prior art of record to disclose that foamed aqueous adhesives can be used in the manufacture of tubes and cores. Knauf provides no disclosure or suggestion to use a foamed aqueous based adhesive as adhesive layer 33 let alone adhesive layers 21 or 23, or to bond a first ply to a second ply to form a tubular container. Pole et al. fail to cure this deficiency.

Pole et al. fail to suggest that foamed aqueous based adhesives may be used in the applications described by Knauf, or in core and tube winding operations in general, let alone suggest use of vinyl acetate/ethylene copolymers, vinyl acetate, dextrin polyvinyl acetate, polyvinyl alcohol and/or acrylic foamed adhesives.

Applicants also submit that any rejection of the claims over Knauf alone or in view of Pole et al. was constructed through the impermissible use of hindsight and that the claimed subject matter is not obvious over such disclosure(s).

The prior art does not suggest or provide any motivation to use aqueous based foamed adhesives to bond one tubular shaped ply to a second tubular shaped ply. The prior art fails to provide teachings suggestive of a reasonable expectation of success. The prior art fails to teach or suggest all the claimed limitations.

Applicants submit that the claimed invention represents a patentable contribution to the art. Favorable and early action is requested.

Respectfully submitted,

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